

OSA -1293-67

20 March 1967

25X1A

To:

Subject: OXYGEN RESTRICTION IN AIRPLANE 130

Dear Bruce,

The exact cause of the oxygen restriction described by the pilot on the attached statement has not been determined. All of the airplane and pilot's hardware have been completely inspected and functionally checked with no malfunctions being uncovered. These inspections and tests are listed separately.

But, as a result of this investigation, it has been realized that all items in the oxygen systems have been dualled up except,

1. The reference pressure sense line from both regulators to the oral-nasal cavity.
2. The demand oxygen line from both regulators to the oxygen spray bar.
3. The helmet exhalation valve.

To be a true dual oxygen system these items should also be dualled up. Although there have been valid reasons in the past for not doing so, flight experience is forcing another look at these items.

It is not possible to say positively that a restricted reference pressure caused the Airplane 130 incident, but it is noteworthy that,

1. Most helmets have a .375 diameter reference pressure sense line.
2. Only four helmets at the Area have .188 diameter sense lines. These belong to D.S. and J.W.
3. One of J.W.'s helmets has this small sense line restricted where it enters the oral-nasal cavity because the line has been pinched and the round hole elongated. This is the helmet that was in use on Airplane 130 at the time of oxygen restriction.

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We are also experiencing another kind of trouble with these pressure reference sense lines at Beale in that entrapped condensate or sweat is permitted to run down into the regulators. The attached sketch shows this present installation - note that the line is downhill so that any moisture or foreign object would go down the tube into both of the regulators.

In view of the above, we believe that all helmets used at [] Beale should have,

1. Dual sense lines as shown on the attached sketch. The routing should be as shown to eliminate trapping moisture, etc., at the inlets to the regulators.
2. Dual demand oxygen lines routed to each end of the spray bar.
3. Dual exhalation valves,
 - A. One valve set at 1.5 inches H₂O
 - B. Second valve set at 2.0 inches H₂O and located in a sheltered area to avoid moisture condensation.

In particular, [] the one helmet of J.W.'s must be grounded until repaired and the other three helmets should have .375 diameter sense lines installed as soon as possible.

Best regards,

[]

meb

Attachments

S T A T E M E N T

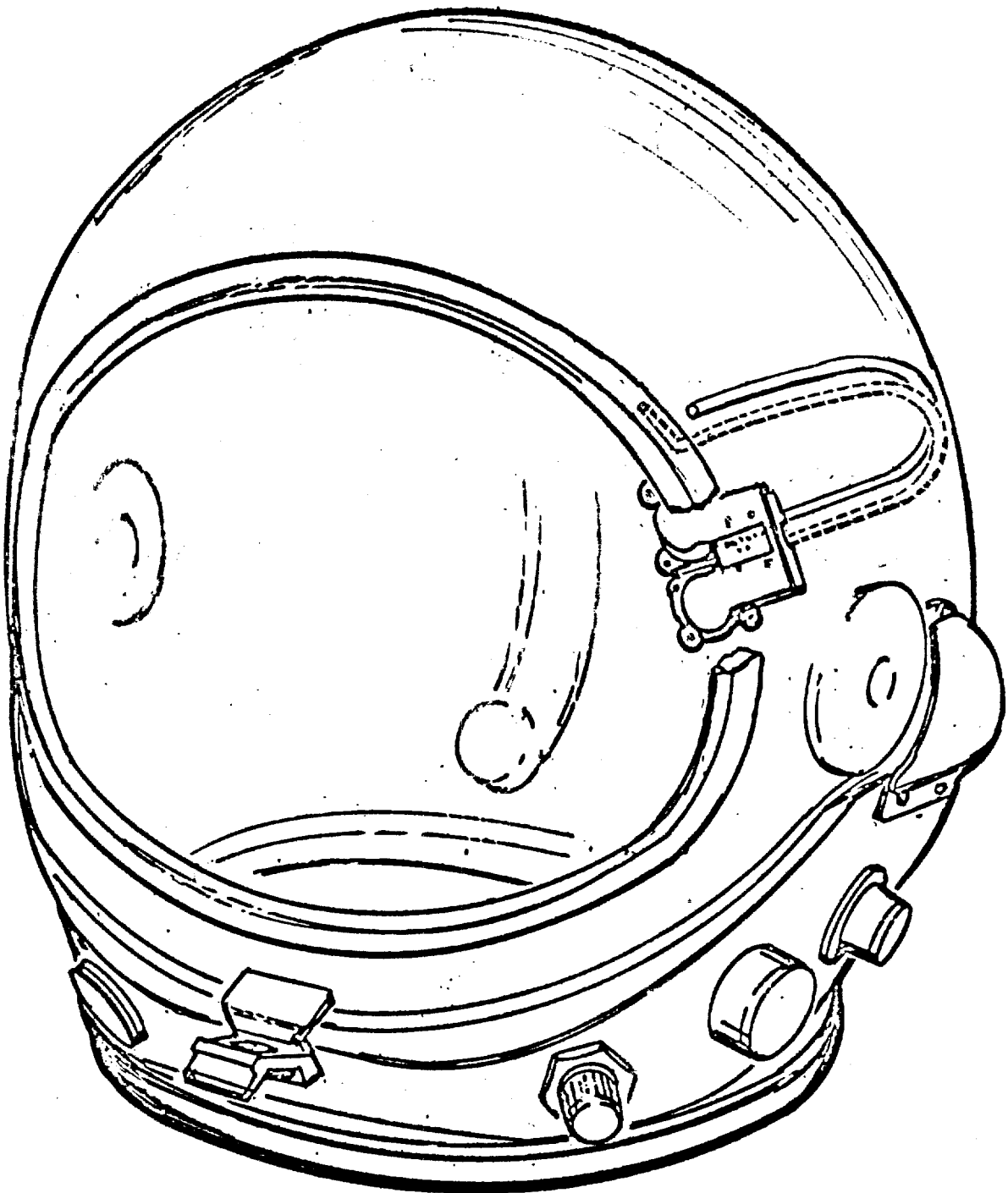
14 March 1967, aircraft #130

Pilot:

1. Shortly after air refueling and during climb out, I noticed that O₂ flow was not keeping up with demand. One inhalation was at low flow, the next was about one-half breath, the next no O₂ available. A quick check of low-pressure supply and quantity indicated no problem. Each system was 100 psi and steady with 8 and 9 liters available. Just as I was reaching for the "green apple" O₂ started flowing into helmet; why I don't know as all monitoring devices indicated OK and no change in previous readings.
2. About 20-25 minutes later during cruise the same thing happened again - still no indication in cockpit that anything was wrong with O₂ systems. Everything was monitored pretty close after first malfunction. This time I immediately hit the pressure release on the helmet and there was no O₂ flow. Face plate seal was already deflated and visor opened with little effort. Oxygen indication still the same; 100 psi each system with 8 and 9 liters. Within 2 or 3 seconds O₂ started flowing in helmet so visor was shut and no other problems encountered for remainder of flight.
3. Flight duration was 2 hours and 15 minutes with the above malfunctions occurring about 1 hour and 1:30 after takeoff. The "green apple" was never pulled as the problem cleared just as I started for the emergency supply - at that time I figured that I had a suit problem and the "green apple" wouldn't help anyway.
4. Preflight was all normal - everything seemed to be OK. I did notice that O₂ flow pressure supply was slightly over 100 psi (105 psi and 110 psi), but didn't think too much about it as it is not uncommon. Inflight low pressure O₂ never was noticed above 100 psi (or below either).

PRESENT SINGLE .38 OR .19 DIA.

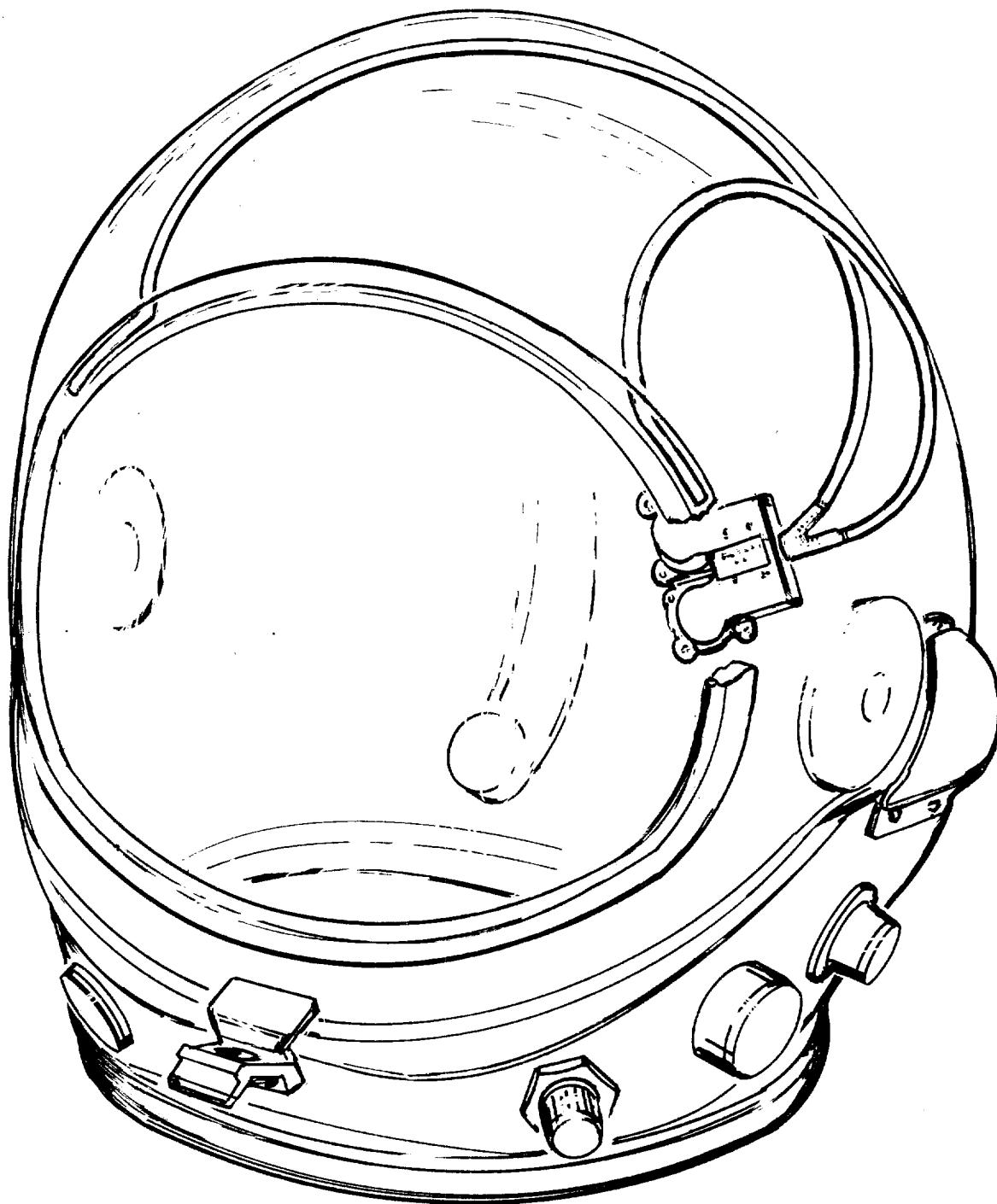
SENSE LINE; PERMITS MOISTURE
TO ENTER REGULATOR



SINGLE OXYGEN DEMAND AND SENSE LINES

DUAL PRESSURE REFERENCE SENSE LINES

- A. .38 DIAMETER
- B. ROUTED TO PREVENT MOISTURE
RUNNING INTO REGULATORS



DUAL SENSE LINES